Space Weather Forecast

Issued on Sunday, 01 October 2023 at 01:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-flares throughout. Chance of G1 Minor Storm conditions on day 2 (02 Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate with frequent Common-class flares and a single low-level Moderate flare observed; the latter sourced from a new sunspot region in the far northeast. There are eight sunspot regions on the disc. The most notable regions are the two sunspots in the northeast. Both continue to show ongoing development and some magnetic complexity, despite their still relatively small size. They are also close enough to have some potential interaction between them. A region now moving into the northwest disc, persists as a small and slightly complex region. The largest region, located in the southeast remains relatively simple, despite some modest increase in size. There is some magnetic looping evident in solar imagery at, or just over the eastern limb in both hemispheres, suggesting further regions may be close to rotating onto the visible disc.

No Earth-directed CMEs (coronal mass ejections) have been observed.

Solar Wind / Geomagnetic Activity: Solar winds have eased from slightly elevated levels to near background, reducing from around 430km/s to 390-400km/s during the period. The interplanetary magnetic field (IMF) was weak and easing. The north-south component has been largely weakly negative. Resultant geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels, with no Solar Radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate with a chance of further isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. The next notable enhancement is most likely to occur on day 2 (02 Oct) due to the arrival of the fast winds from a coronal hole. This feature is currently in the northwest disc, but with a southeastern extended lobe which has a greater potential for a geoeffective connection on day 2 (02 Oct). A further, small coronal hole enhancement is possible on day 4 (04 Oct). Geomagnetic activity is expected to be Quiet to Unsettled on day 1 (01 Oct), then Quiet to Active between days 2-4 (02-04 Oct) with a chance of G1 Minor Storms on day 2 (02 Oct) and day 4 (04 Oct).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at Background levels, with no Solar Radiation storms expected.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	30	10	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	50	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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